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ORIGINAL ARTICLES.

THE HORSE'S FOOT.

BY A. ZUNDEL.

(*Continued from page* 375.)

LAMINITIS.

VI.—*Etiology.*—Laminitis has been attributed to many and the most varied causes, and, among others, has now been ascribed to a traumatic origin, consisting of injuries of the foot; and again, to internal lesions, resulting in the inflammatory process which is characteristic of the affection.

The external traumatic injuries, which it is claimed are those chiefly instrumental, are on the contrary, of very rare occurrence as causes of the disease. Our observations agree with those of H. Bouley, and if there is a traumatic causation for this disease, or, at least, one identical with it in respect to symptoms and primitive lesions, it is nevertheless, certain that its progress is very different; there is found with it an evident tendency to suppuration instead of exudation, and there is no such formation as the chronic process which is found when laminitis is due to an internal phlegmasia.

It has been said in reference to the action of the heated shoe upon the hoof, the percussion of the blacksmith's hammer and the pressure of the shoe and of the nails upon the living tissues, that all these causes together must, as their sure effect, make the foot tender, and stimulate in its constituting structure, the conges-

tion which is the initial phenomenon of founder itself. But this assumption may be successfully contested. Bad shoeing may produce many forms of lameness; never laminitis. It has been said that feet of defective conformation are more commonly affected with founder that those which are well formed. This, however, is not so, and feet with contracted heels are no more predisposed to it than flat feet, as claimed by Girard. Traumatic accidents, as blows, injuries and pressure, produced by stones, crushing of the feet under heavy weights or under the wheels of a truck, etc., may produce a violent congestion of the reticular tissue of the foot, and consequently laminitis. But this founder itself is of too active a character and more complex perhaps, with a natural tendency to suppuration, as we have already said. It must then be considered as varying from laminitis proper, or that form in which the congestion is of a more passive character, or at least internal and somewhat analagous to that which is sometimes observed in the lungs or in the intestines. It might be better described as an "astonishment" (*étonnement*) of the foot, as it is sometimes called.

Laminitis proper is rarely due to a unique cause, but more properly to a number of circumstances or to an assemblage of various causes by which the horse is at first somewhat indisposed —sick in fact; and it is only after various general symptoms that the disease localizes itself in the feet, or, as the old phraseology has it, falls in the feet.

The most effective cause is too abundant, and especially too substantial feeding, which produces plethora by rich blood. It is the use of other grains than oats, as wheat, barley or rye, which especially predisposes to the disease. Latin authors called it *hordeatio* (from *hordeum*, barley), and it is mentioned by Sollysel, Garsault, Gaspard de Saunier, and various hippiatrics. Rodet has observed its bad effects in Egypt and in Spain, where animals were fed not only with those grains, but when they received wheat in spike. Miltenberger had observed the same effects during the war of 1812, in Poland, where the horses were fed with rye. In our days even laminitis is seen breaking out in the years when feed is scarce and when oats have to be replaced by other grains, as is proved by the observations of Bouley, Verrier, Rey,

etc. Artificial varieties of fodder also predispose to founder, though less often ; even oats, when given in excess, may produce it (Solleysel, Blind), and especially if new oats (Hertwig).

The influence of seasons cannot be denied, and it is during the summer months that laminitis is more frequent, while it is rare in winter, as well as in spring and fall. It is to the warm climates of Spain and Egypt that Rodet attributed in great part the frequency of the founder observed in the army horses engaged in campaigning in those countries. It has been also attributed to the sudden checking of the perspiration, and cutaneous chills when the animals are sweating; a cold bath or the drinking of cold water at that moment having also often been considered as occasional causes.

The work of the horse greatly influences the development of laminitis. It is more frequent in those which are driven at great speed than in those which work while walking, and especially in whose frame an excess of strength is required, and particularly those which labor on rough and stony ground. It is almost inevitable if the animal is well fed and if he is unaccustomed to that kind of work and not trained for it, and most especially if it is during warm weather. This explains why the disease was so frequent amongst post, diligence and coach horses, especially during the period preceding the establishment of railroads, when the expenditure of strength exacted from these unfortunate animals reached the last limits of possibility. More recently, again, during the war of 1870–71, when railroad traveling was more or less impeded, laminitis became more common amongst horses from which an excess of muscular effort was required. It is a frequent and very serious accident among English race horses (Hering).

Laminitis in oxen is due almost exclusively to the fatigue of long journeys and to the repeated frictions of the unshod feet upon the ground. It was very common before the era of railroads in animals brought to markets.

But prolonged rest and inaction also predispose to founder. The disease is frequent in horses making sea voyages. It is not rare to see horses become foundered when they are obliged to stand up during several days in consequence of injuries to the extremities, or other pathological conditions requiring them to be

kept in slings. In diseases of the feet which have required painful operations (toe or quarter cracks, punctured wounds of the feet, quittor, etc.) it is quite common to see an animal persevere in maintaining the standing position, and too often has the leg corresponding to the one first attacked become also affected, leaving both of the anterior or both of the posterior ultimately affected in a serious manner.

It is common for laminitis to follow intestinal congestions, especially if these result from the administration of a drastic purge, as aloes for example, and this is a very serious form of the disease. Tisserand has seen laminitis of the anterior extremities following parturition in mares, and particularly after abortion. Gloag and Smith have observed similar facts. Hertwig says that it sometimes follows rheumatismal affections, especially the acute form.

A metastatic laminitis has been seen following diseases of the chest. H. Bouley does not believe in these cases, and thinks the laminitis is the effect of the quadrupedal standing position, or also the feeding with farinaceous substances in too great quantity. At times founder accompanies malignant fevers, such as anthrax and typhoid attacks, which are always accompanied with a certain alteration of the blood.

VII.—*Treatment.*—In acute laminitis all attempts must tend to remove the congestion of the keratogenous apparatus, or at least to abate its intensity, so as to prevent or diminish the serious sequelæ that may too often follow. To effect this, general or local bleedings have been specially recommended, with antiphlogistic applications upon the congested regions. General bleeding at the jugular is especially indicated; a large bleeding of from five to ten litres, repeated if the pulse or the condition of the disease indicates it. Local bleeding, often recommended, seems to us, generally speaking, to be useless; that of the toe is of difficult performance in founder, as the feet are usually raised from the ground with difficulty, and the operation is quite painful, and may give rise to more or less serious complications. However, in serious cases it can be done while the animal is thrown down, not so much on account of the blood depletion as to prevent the possibility of gangrene supervening. It is more useful in the ox, ac-

cording to Lafosse, who recommends to pare the foot down to the quick and to put on the shoe again if the animal has to continue its journey.

The topical applications employed are varied and numerous; the simplest and most practical is cold water, cold baths at half the leg, taken in running water, if it can be done, and if the animal stands up; walking in the water is then recommended, if practicable, walking increasing the venous circulation of the part. Instead of running water, ponds, marshy grounds, pools of stagnant water, or even liquid manure may serve the same purpose. In establishments where there are many horses there are special tubs where the water is constantly changed. The animal may be placed in some of these up to his fetlock in an astringent solution. Mathew has invented an apparatus for continued irrigation, consisting of a reservoir of water elevated above the body of the animal: around each coronet is placed in shape of a bracket, a tube of india rubber, perforated with holes opening on the hoof; from the reservoir runs a tube which bifurcates and furnishes to each leg a descending division connected with the bracket. The water is then allowed to run around the coronet and drip over the foot. Instead of simple water the use of snow or broken ice has been recommended, wrapped in cloth round the hoof; pads of oakum dipped in solution of salt, sulphate of iron, or alum; clay poultices mixed with vinegar have also been used. As the heat of the foot has a tendency to rise, the temperature of the liquid or of the topic used must be often changed in order to keep up its antiphlogistic effect. Baths of sulphate of iron are especially indicated in cases of traumatism.

Irritating frictions used as derivatives are also recommended, but their efficacy in this case is at least problematical. Irritation, when the congestion is somewhat passive, is not easy to produce. However, frictions of the hock with oil of turpentine, by the pain they produce stimulating the animal to move and not allowing him to remain in a state of almost complete immobility, may be advantageous. Blisters around the coronet are useful towards the third or fourth day, when plastic exudation or hypersecretion of the hoof are to be feared.

Frog seton is recommended by English practitioners; Gabriel

says it is a sure means to prevent the separation of the nail. This seems to us unwarranted. Internally, the administration of nitre, cream of tartar, ammoniacal salts, sulphate of soda, are given; drugs which are indicated by the febrile state; alkaline remedies are administered to render the blood more fluid and increase the venous circulation. Aloes, recommended in England and by Hertwig, is contra-indicated, as increasing the disease and facilitating the dropping of the foot.

It has been advised to take the shoes off. This is not only a difficult operation, on account of the sufferings of the animal, obliged to stand up on one leg, but it seems to us useless. Shoeing has not the effect supposed of it in the etiology. If it is well fitted it is not uncomfortable to the foot, while its removal from the shoe, by the hammering it requires, is always painful, and had better be avoided.

It has been recommended to pare the foot, to shorten it, to thin the sole down; but this operation seems to us in many cases superfluous. It is true that the topics will act more readily upon the living tissues underneath, but the advantages thus obtained do not compensate for the difficulty of the operation; at any rate it cannot be done except when the animal lies down.

We shall pass silently the effect, so to speak homeopathic, that English veterinarians pretend to obtain with very warm poultices around the foot, and which have their reasons only when suppuration or gangrene is threatening. Neither shall we refer to the compression of the foot, recommended by Nanzio—a treatment which is much nicer in theory than in practice. In a great number of cases the patient is considerably relieved by resting on a good bed, and this is especially necessary for severe laminitis when locomotion is very painful. However, in less serious cases, walking on soft ground, especially on grass, is an excellent treatment. It stimulates the circulation in parts where the blood has a tendency to accumulate, and controls the venous engorgement of the keratogenous tissue. It has been sometimes recommended to support the animal in slings to relieve him; but as with this one would expose his patient to pulmonary complications, it is better to cast him and keep him in that forced position, being careful to turn him over from time to time.

A dietetic regime, light feeding, during the first days at least, cooling drinks, rectal injections and comfortable blankets are all indicated.

One must particularly watch what takes place in the foot, and for this purpose grooves made at the surface of the foot have also been recommended; but they cannot be made deep enough, as the wall is always there resisting more or less to the eccentric forces of the deep parts.

If towards the third or fourth day there is no marked improvement, especially in traumatic founder, if even the patient becomes worse, if the pulsation at the digital arteries is stronger, harder and more frequent, it becomes necessary at once to thin the sole down, and make a puncture upon the line of demarcation of the sole and wall with the drawing knife. Often then a flow of pus or blood, more or less altered, takes place, the nature of which indicates the progress of the disease. If it is of a grey blackish color, it is evidence that the horny tissue only is affected; while if white, it indicates a greater change. Hertwig advises this operation always, when laminitis is of long duration. He thus produces an artificial seedy toe, which is considered the mildest form of the disease. He recommends to make a deep groove upon this white line so far as there is separation of the wall from the podophyllous tissue, and then combines the treatment with the use of astringent baths of sulphate of copper. We have on several occasions been pleased with this treatment, combining it with the application of a blister around the coronet. It is preferable to the longitudinal grooves, or to the trephining, which is sometimes recommended.

There are numerous cases, however, when, notwithstanding all these rational means, the disease cannot be arrested, and when a fatally chronic laminitis ensues. This must be considered incurable in the majority of cases. It is almost impossible to bring the foot back to its physiological condition, and, above all, to prevent the hypersecretion of the hoof which characterizes it.

However, in case of simple seedy toe, if it is the result of hœmorrhage, or even of suppuration, a cure may sometimes be obtained. Generally, by thinning it down, the entire portion of the wall which, at the toe, the mammæ and the anterior part of the

quarters is superposed to the keraphyllous hoof, without adhering to it, is removed. The keraphyllous hoof, also, is thinned down in its whole extent; then a dressing of hoof ointment or tar is applied so as to protect it from drying and to keep it supple. In these cases the hoof coming down from the coronary band has sometimes united with that flowing over the podophyllous lammæ. At other times the seedy toe is only cleaned of its contents, and is filled with medicated oakum, if there is a wound of the podophyllous tissue, or with hoof ointment and Venice turpentine, the whole being kept in place by a wide web shoe. The last treatment seems to us the best, only instead of hoof ointment we employ gutta percha, melted with gum ammoniac, as recommended by Defays. For this there must be no wound, and the cavity must be well cleaned of all substances, or even washed with ether to remove all greasy substances which would prevent the gutta percha from adhesion with the hoof. This course has enabled us to see deep seedy toes recover by the gradual growth of the foot. Hence, the indication to try to obtain an artificial seedy toe as early as possible, as recommended by Hertwig.

When there is thickening of the keraphyllous horn and adhesion with the wall; when, also, the toe is formed entirely by a deformed horny mass, the case is more serious and the treatment more uncertain. It has been recommended, wrongly, we believe, to perform the operation which consists in cutting off all the protruding hoof—to even cut off all the accidental production. To do this the rasp and drawing knife are used, the keraphyllous mass being thrown down as much as possible. D'Arboval has also advised to make with the drawing knife an artificial seedy toe between the internal face of the wall proper, which is preserved, and the anterior face of the podophyllous apparatus, upon which a thin layer is left. This treatment has an advantage over the other of keeping the wall intact, to render easier and more solid the application of the shoe which is to protect the foot and allow the animal to resume his work. This operation, however, is only palliative. It, however, gives great relief, especially in the first steps of chronic laminitis.

Gross has been satisfied with thinning down with the rasp the superior part of the wall, below the coronet, in a width of about

four centimeters, in such a way that from one heel to the other there was only a very thin coat, which he protected with basilicon ointment. The coronet was then stimulated with a little oil of cantharidos. Under this treatment a new growth of hoof is started, not so protruding, and by paring down by degrees the hoof, a new foot was grown in a few months, less deformed and more regular.

Meyer and Gunther say that they have obtained good success with this treatment, which nearly resembles that of Gohier and Dehau, except that with those the entire wall was pared down to a thin pellicle, flexible under the pressure of the finger. Silberman advised to place around the hoof, below the coronary band, after paring it down thin, a band of steel, two fingers wide, which could be tightened by a screw placed at the heels. In this way the secretion of the coronary band was kept under control, but not that of the podophyllous tissue.

Generally in these cases the suppleness of the hoof must be kept up by appropriate topics. It must be cut off when too thick, and a shoe must be applied sufficiently wide in the web to protect the anterior part of the sole as far as the point of the frog. This shoe must be quite hollow on the foot surface, so as to avoid any pressure upon the sole. It must be nailed on principally at the heels, as nails at the toe would not hold sufficiently. Between the shoe and the foot a piece of gutta percha, or felt or leather may be put on. Thus shod, a horse will still do long service, even in cities, and much more in the country.

When there is a wound at the sole, with separation of the part, suppuration, caries of the os pedis, which protrudes through the sole, it is advised to have recourse to a surgical operation. The contents of the abscess under the sole must be evacuated, and the sole thinned down in the entire plantar region. If the bone is carious it is scraped, the necrosed parts are removed, and a proper dressing, kept up by plates under the shoe, is put on. There are a few cases where by this treatment horses have been enabled to resume their work.

Often in chronic laminitis when, notwithstanding the operation and the shoeing, the horse is unable to resume his work, according to H. Bouley, the operation of neurotomy will then be

beneficial. Grad is not of the same opinion. He claims that the relief is then uncertain and only temporary. Jessen, Hering, &c., say that this operation is followed very often by the sloughing of the hoof, and the animals stumble very easily. According to Bravell this operation is followed by a greater growth of the hoof. If the lameness is reduced after the operation the deformity of the foot continues to increase.

(*To be continued.*)

ACUTE ARTICULAR RHEUMATISM, COMPLICATED WITH SWELLING OF THE GLOTTIS.

By W. F. Derr, V. S.

As the case appears to me an uncommon one, I have ventured to lay it before the readers of the Veterinary Review.

On July 10th I was asked to see a brown mare, eight years old, by Dr. Warren of this city. The mare had been out to pasture, and had been brought in on account of not being well. When I saw the mare standing in her stable, breathing with a loud and roaring noise, I thought it at first a case of strangles. Pulse, 83; temperature, 104½; nasal membranes injected; discharge of frothy saliva from the mouth; but could detect no swelling around the throat or glands. Pressure on the larynx, however, produced cough readily. I had her led out of the stall to make a more close examination, but could find no tenderness of the limbs at any joint. I told the doctor that I would withhold my diagnosis until morning, as I was at that time treating some cases of influenza, complicated with rheumatism.

Treatment: nitrate of potash in her drinking water, stimulating embrocation to the throat, with comfortable clothing.

11th.—The throat better, but the left stifle joint so swollen that she will not bear any weight on it or bear to have it touched. Pulse, 88; temperature, 105; respiration, 40. Refuses all food. The least movement would excite her very much.

Diagnosis: Acute articular rheumatism.

Treatment: Sodium salycilate ℥iii, in aqua, ℥x, every four hours, hot fomentations to the stifle, and also administered a dose

of aloes, ʒ vii. I had some difficulty in giving this, on account of the state of the throat.

12th.—Swelling has disappeared from the left stifle and gone to right fore knee; throat doing finely, slowly responding to the purgative; appetite returning some. Respiration, 33; pulse, 67; temperature, 104. Salycilate of soda in three drachm doses, in water, every five hours; external treatment to knee same as yesterday.

13th.—Swelling disappearing from knee, no other appearing. Respiration, 18; pulse, 52; temperature, 102½. Will eat a bran mash. The throat has completely recovered. Salycilate of soda ʒiii, in water, evening and morning.

15th.—Convalescent. Treatment: tonics and to be kept in the stable ten days without work.

On the 20th she was brought to the infirmary breathing with a very loud noise, the same as at the first attack. I placed her in a large box stall and had her well covered with clothing. Could, at this time, detect no swelling of her limbs or soreness. Respiration, 29; pulse, 63; temperature, 103½. Treatment: embrocation to the throat, with nitrate of potash in a bucket of water. At 7 P. M. administered, with difficulty, a dose of oil and salycilate of soda, and she was then left for the night.

21st.—Respiration, 36; puls , 85; temperature, 105¼. with an abundance of saliva from the mouth until it was over the floor. Swelling of right hock and left front knee. In trying to turn her she fell down without bending a leg. Her respiration got greatly excited while down; pulse ran up to 120, and she perspired profusely. I had her well bedded with an abundance of straw, and kept her down as long as she rested comfortably, which she did for a few hours.

Treatment: small doses of aconite and belladonna every few hours, on the tongue, as she could drink nothing, all fluids passing back by the nasal chambers. Applied hot cloths to the swollen joints, and gave injections, as she had no movement of her bowels since yesterday. 5 P. M., swab the throat with the following: tinct. perchlorate of iron ʒi, acid carbolic ʒi, aqua ℥xii.

22d.—Throat better. Nibbles at a bran mash. Pulse, 68;

temperature, 104; respiration, 28. Treatment: swab the throat again, and as she can now swallow again, we, by being careful, again commence giving the salycilate of soda in three drachm doses every four hours.

23d.—No improvement since yesterday, but have the patient placed in slings, to which she takes nicely. Treatment same as before.

24th.—Doing finely. Can begin to eat a bran mash. Swellings of her limbs are beginning to disappear. Pulse, 61; temperature, 103¾. Continue same treatment.

25th.—Is again approaching convalesence; appetite improving; can begin to move her legs, and after taking away the slings lies down herself, for the first time, this morning. Pulse, 50; temperature, 102. Treatment: the salycilate of soda is to be given every six hours, in three drachm doses.

26th.—Swellings are fast disappearing; appetite good; bowels regular. Pulse, 48; temperature, 101½. Apply weak liniment to the joints, with friction, and salycilate soda evening and morning.

27th.—Doing finely; no change of treatment.

28th.—Convalescent. Treatment: ferri sulph., ℥iss; nux vomica, ℥vi; nitrate potash, ℥ii; mix, divide in twelve powders, one to be given evening and morning.

29th.—Sent home, a distance of about a mile. The mare kept doing finely, all but a cough, for which I prescribed iodide potassa in half drachm doses, evening and morning, with a blister to her throat, so that by the middle of August she was doing light work around the city—enough for exercise.

On September 4th the doctor sold the mare to Albert Koch, a livery man of this place, for a good round sum. On the 6th I received word that Mr. Koch had a sick mare. I was astonished to find my old patient in his barn, and in the same condition as heretofore. The disease commencing in her throat, I gave about the same treatment as I had done before. In twenty-four hours the throat was better. Then her limbs began to swell again, which continued for five days, and then the disease began to abate. She was again convalescent on the 14th, with slight swelling, which disappeared in a few days. On the 20th she was

again brought to the infirmary, breathing hoarse and loud, with an abundance of saliva from her mouth. I applied the same solution to her throat, with a little sponge on the end of a flexible rod, and gave the same treatment as I had done before, so that by the first of October she was again convalescent and ready to go home, but considerably reduced in flesh, though feeling in good spirits. On the 7th of October she had another slight attack in the throat and limbs, but nothing like the former attacks. The doctor and Mr. Koch had a controversy about the mare, and I bought her. At the change of the weather she gets slight attacks in her throat, which will last from three to four days, when she will feel as well as usual. On the 1st of November I commenced giving her ℥ ss doses of iodide potassa, with liq. arseni. potassa ℥ i, in her feed.

She kept on improving, so that by the 20th of November I commenced driving her, and have driven her up to the time of writing this article, December 10th, without observing the least symptoms of rheumatism.

What appears remarkable to me in this case is that the disease always commenced in her throat, and on its disappearing from the throat the limbs would begin to swell. It always made its appearance in the throat twenty-four hours before any swelling could be detected at her joints. There was at no time any swelling of the throat or any of the glands of that region. As I have never read or heard of rheumatism in the throat, I will leave it to you whether my diagnosis of the throat is correct.

HAIRY TUMORS OF THE WITHERS.

By J. S. Cattanach, V.S.

On the 21st of last September I was called upon by Mr. D. Mace, of this city, to see a horse that had an enlargement on his off shoulder. It was situated about twelve inches down from the withers, near the posterior border of the scapula, and on a horizontal line with the tuberosity of the accromion spine, was four inches in length, and of a pear-shape, the broadest part being at the base. On manipulation, it seemed a hard substance sur-

rounded by fluid. I suggested an operation, and ten days after, the animal was brought to my place. I made an incision and found immediately under the skin a fibrous looking tumor, on cutting into which there exuded a dark colored fluid almost approaching to black. On enlarging the incision there appeared a substance which at first sight seemed like oakum. I introduced my finger into the sac and emptied it of its contents, which on close examination proved to be hair of a very fine texture, varying from one to three and one-half inches in length, closely matted together, and about as much as would make a good sized side whisker. The animal had been owned by Mr. Mace about six months and had this enlargement when purchased. He would allow the growth to be handled, or even pinched without evincing any pain whatever, but on touching the mane immediately over the enlargement, it would evince great uneasiness, and squirm as an animal would from fistulous withers.

On the first day of last November a bay mare was brought to me from the same owner, having an enlargement similar to the foregoing, but situated on the left shoulder. I made an incision and discovered that the tumor contained hair; did not cut into it further, but sent the animal at once to my friend Prof. Liautard, at the American Veterinary College, as a clinic. This animal had the enlargement when purchased twelve months previously, but differed from the other, as it did not evince any pain or uneasiness on the tumor or any of its surroundings, on being handled. The hair which was extracted in the first case shows at one of its ends a bulb which would suggest a keratogenous secretion. I would suppose it came from the hair bulbs of the mane, which owing to increased activity due to irritation, became detached and after working their way through the connective tissue, finally became located and enveloped with the fibrous sac. Both cases have terminated favorably.

EXTRACTS FROM A DAILY JOURNAL

CONCERNING THE TREATMENT OF GLANDERS AND FARCY.

By J. P. Klench, V.S.

During two years, from June, 1862, to May, 1864, I was em-

ployed as veterinary surgeon by an English company, who were then constructing railroads in the Grand Duchy of Luxembourg, Europe, and had the opportunity of keeping a central hospital for the diseased and disabled horses. I found there a good many horses affected with glanders and farcy, and was allowed to keep and subject them to treatment.

All the horses, numbering 227, had their numbers branded on the left fore-foot, like the cavalry horses in France. A special journal was kept, wherein I marked the days when a patient entered and left the hospital, also the nature of the disease, its treatment and final issue. Besides this journal, I had taken a good many notes, written on loose paper, of which I can now, very unfortunately, find only a few. Thus I was enabled to make a brief résumé of all the cases of glanders that came under my observation, but can only satisfy the readers of the REVIEW with such of the notes as I have on hand.

In publishing these notes I simply intend to make known the facts of my private clinique, with a view to contribute my little share to the history of that terrible disease called glanders, and cannot but express the great regret I feel in being unable to give a complete history of all the cases mentioned in the journal. I will give a faithful copy of my record-book without any correction or comment. This last I will leave to more competent persons. Before beginning this enumeration I wish to say a few words about the presumptive causes of glanders amongst our horses; the police laws as enforced in Europe concerning the contagious diseases; the symptoms of glanders, and the treatment I had used to cure them.

The work of these horses had been one of great hardship and permanent exposure to the inclemencies of the weather. They had to be outside all day, feeding over dinner under a tree, unprotected from the wind and rain, and very often during working hours obliged to stand still every now and then, while rain and wind were coming right down upon them, chilling their body all through. As the railway was being built through a valley, crossing a creek very often, the horses were obliged to wade through the water at some places three feet deep. There were, for one instance out of many, about twenty horses carry-

ing sand from the bed of the creek one mile and a half distant from the tunnel, where mason work was going on. These horses had to cross that creek six times at every trip, making ten trips a day, so that the legs of these animals were constantly wet. I noticed that in less than six months most of these horses showed suspicious symptoms, some of them getting confirmed glanders in a proportionally short time, nearly all commencing with a farcinous swelling of the hind legs. It can reasonably be supposed that the influence of the weather and the frequent wading through the water caused a disturbance in the perspiration of the skin, in the functions of the mucus membrane of the respiratory organs, and also in the vital fluids in general, and thus laid the foundation of the incurable disease of glanders.

But, besides these evident causes of glanders amongst our horses, the sanitary condition of these must be regarded as a very defective one, as glanders had been raging amongst the company's horses for several previous years, and then direct contagion had been spreading the disease amongst those recently bought. The directors of the company were well aware of this danger, and gave orders to all the foremen along the road to separate and send immediately to the hospital every horse that had running from one or both nostrils, in order to diminish as much as possible the chances of direct contagion. The horses were kept in a very good condition; so I am convinced that no case of glanders during my time of service can be attributed to general debility or poor feeding, but that all of them were caused either by direct contagion or the influences of the weather, or the passage from chronic catarrh or old distemper or other chronic disease, grave enough to cause a disturbance in the vital fluids of the animal or to diminish the latter's strength.

The sanitary condition of our horses had always been closely watched by the county veterinary surgeon in Luxembourg. Let me remark here that in all European countries the sanitary laws are very strictly enforced, and that a severe punishment would surely await the veterinary surgeon who would undertake to treat glandered horses without first notifying the Government of it. At various times my infirmary was inspected by the veterinary surgeon of the respective county, and I had to give sufficient

evidence that our suspicious and glandered horses were all kept well separated from the rest of our horses, and especially from the outside. I must call the reader's special attention to this remark, as many of our horses, after having been treated as suspicious and even glandered, were, on their being released from the hospital, considered so well cured (externally at least) and free from any nasal discharge or farcinous ulcer that they could work outside on the public roads without falling in conflict with the national police laws.

In order to avoid any misunderstanding as to the real value of the cases that will be enumerated below, I will give a short résumé of all signs and symptoms upon which I always based my diagnosis.

A horse showing a hard, indolent adherent intermaxillary gland on one or both sides was closely watched; if a sticky, brownish or greenish discharge, with or without any streaks of blood, came from the nostril of the same side, I declared the horse suspicious. If the nasal wing (elevated with the thumb) was infected, showing a rough surface and one or more miliary tubercles, white or inflamed, the suspicion was of a more grave character; if any ulcer was found on any visible part of the Schneiderian membrane, coexisting with gland and nasal discharge, as given above, it was a clear case of glanders. These are the essential pathognomonic symptoms of glanders.

I must again mention the importance of examining the condition of the membrane under the nasal wing. I found many horses that had one or more suspicious symptoms for a long time, without an ulcer ever becoming visible on the membrane, while at the same time an irregular, rough, infected surface, with one or several miliary tubercles located on the membrane under the nasal wing, would clearly indicate the existence of ulcers in the upper parts of the nasal cavity. In my twenty-two years' practice I never found this sign to fail, and do entirely agree as to the importance of this sign with my very old, respected Professor Henry Bouley, of Alfort.

If a bad, one-sided nasal discharge, coexisting with a hard, bad gland on the same side, resisted for a long time a regular treatment without showing any improvement, it was considered of a grave nature, even if no ulcer could be detected.

If horses that had been suspected for some time showed suddenly one or more farcy-buttons, or a farcy cord, or any farcy swelling on any part of the body, and especially the hind legs, the case was treated as one of glanders. A bad coat, an old, chronic, resisting cough, and, especially, the appearance of a sarcocele or any kind of swelling in the testicular gland or its cord would constitute a bad sign; and in connection with two of the pathognomonic symptoms would cause the horse to be condemned as glandered, even if no regular chancre could be seen. I laid a special weight on the character of this cough, for the reason that a good many of the suspicious horses had that symptom at the first visit already, and just such horses were certain to turn out bad in a shorter time than horses who had it not. This cough was quite unlike that of chronic pulmonitis or bronchitis; is was dry, repeating and painful, with a dull, oppressed, profound sound. I would compare it with that of pulmonary emphysema, except that it had more sound. This cough, which I used to call *glandered cough* (*toux morveuse*) was due to the presence of tubercles in the pulmonary tissue.

The general treatment for our glandered and suspicious horses consisted of a tonic arsenical powder, composed of arsenic, gr. xv; pulvis nux vomica, ʒss; gentian and ginger, powder of each ʒiii; giving one powder a day for two, three or four weeks. Usually rest was taken every fifth day. In most of the cases, when the nasal discharge was abundant and persistent, one or both maxillary sinuses were trephined and injections made therein with sugar of lead, sulphate of zinc, tannic decoction, tincture of aloes, and even liquor of Villate, according to circumstances.

But the directors asked me to try a "procédé" which, they said, had been employed by their veterinary surgeon in England with tolerable success in many cases. I consented to submit that treatment to a fair trial, though I did not put any faith in it at first; but I must acknowledge that after using it several times I commenced to think better of it, and was willing to credit it with a good effect. The following is the treatment, which, for short, I will call the *English medicine:*

"Diet for twelve hours, then heavy bleeding of from four to

six quarts; again diet for twelve hours, after that give the drench, prepared as given below; then feed for twenty-four hours. After that again diet twelve hours, then bleed lightly from two to three quarts; diet again for twelve hours and give the second drench, then twenty-four hours fasting, and afterward feed well in *secular seculorum*."

The drench is prepared as follows:

"℞. Pul. rad. galanque,
" nuc gallasum, } *aa* ℥iii.
" Assafœt.,

One gallon of beer; boil the whole in a kettle closed with a bladder for eighteen hours; let it cool off, and give half of that emulsion at each drench."

(*To be continued.*)

DOUBLE PNEUMONIA IN A SEA LION.

By J. Kemp, Jr., D.V.S., House Surgeon.

A female sea lion, belonging to the "largest show in the world," was sent to the menagerie of the Central Park on the 16th of June. She appeared to be in fine condition, but possessed the peculiarity that she did not go into the water as other lions are in the habit of doing, especially at feeding times, unless compelled to do so by the keeper. Her appetite continued to be good, and she ate her food regularly until the second day before her death, which took place in the night of the 8th of December. Her body was sent to the American Veterinary College for post mortem inspection. The following lesions were disclosed: On separating the two thoracic extremities, the chest was found much distended, and the intercostal spaces, far apart, showed the intercostal muscles bulging out, which suggested the suspicion that the trouble existed in the thorax. The animal being placed on her back, a section was made through the costo-sternal articulations, and the sternum removed. The cavity of the chest was filled with a very dark serosity, about three quarts in quantity. On removing the lungs the third or middle lobe of each was

found extensively diseased with pneumonia, in a state of red hepatization. At some points the lungs seem to be of a livid color, and nearly passing into suppuration. The pleura was much thickened, principally the diaphragmatic portions. The heart was empty. The other organs were healthy. The stomach, however, was entirely empty, with the exception of about three ounces of a dark fluid, containing also a large number of strongyli, some of which had gathered or were collected into a large pouch, imbedded between the muscular and the mucous coat. The uterus presented on the left horn a tumor about the size of a large apple, somewhat oval, soft to the feeling, which on examination seemed to be of a fibro-myoma. The bladder was empty and retracted into the pelvic cavity.

CONTAGIOUS OPHTHALMIA IN CATTLE.

By A. A. Holcombe. D.V.S.

My first opportunity to see this disease was in the latter part of the summer of 1881, when an outbreak occurred among the thoroughbred and grade shorthorns belonging to Messrs. Wilson & Smith, of Leavenworth, Kans. Whether it originated on the farm, or by contagion, I could not determine. No attention was paid to the outbreak until the second case made its appearance, when I was called to give treatment. The two affected animals were immediately isolated from the rest of the herd, placed in a dark stable, and a solution of sulphate of atropia prescribed. Whenever the first symptoms of the disease made their appearance in any of the other cattle, they, also, were at once isolated, so that in a short time the outbreak was suppressed.

No other cases came to my attention until this summer, when an outbreak took place on the farm of Lucien Scott, Leavenworth, Kans. The first case was in a Hereford calf, brought from Beecher, Ill. The disease began about June 20th, and rapidly spread among the calves, until fifty out of sixty were affected. Soon after the disease appeared among the calves, the cows became affected, and eighty out of one hundred became victims. Five of the calves and ten of the cows had both eyes affected. The disease either exhausted itself with the warm weather, or was cut short by the first appearance of cool weather and rain.

This outbreak, unlike the one previously mentioned, was readily traced to its origin, and was undoubtedly due to the introduction of the diseased calf brought from Illinois. I first saw the cases in July, but owing to lack of means for complete isolation of the patients, the spread of the disease could not be arrested. Many of the herd were so wild that no treatment could be applied, unless they were lassoed and tied, the excitement of which did more harm than the treatment did good. Some of the more quiet animals were placed in dark stalls, and put under atropine treatment. This remedy produces very favorable results when adopted early in the disease (if properly applied), but it is worse than useless when applied to animals running at large.

That this disease is not identical with simple catarrhal ophthalmia seems patent; for all the symptoms are more severe, the eyelids more œdematous, hot and red, the palpebræ and ocular conjunctivæ more injected and swollen, while the papillæ are more turgid and prominent. The discharge is purulent, thicker, more copious, and unquestionably contagious.

Unlike simple catarrhal ophthalmia, the inflammation is not confined to the conjunctiva, but by extension involves the subconjunctival tissue, causing not only a secretion of muco-purulent discharge on the free surface of the conjunctiva, but a sero-plastic lymph infiltration of the substance of this membrane. So, also, is the cornea more often and more seriously implicated.

At the commencement of the disease, the patient sometimes suffers most severely, for as the rapid swelling of the lids comes on, he makes frantic efforts to rub the parts against the stall, fence, ground or forelegs, and some moan or even bellow from pain. The lining membrane of the lids, on eversion, is found to be very vascular, swollen and red. The ocular conjunctiva is also abnormally red and swollen. At first there is only considerable lachrymation, but the discharge soon becomes muco-purulent in character, and contains floating flakes of yellow pus and broken down epithelial cells.

The cornea usually becomes cloudy from infiltration during the second or third day. This infiltration is most marked in the centre, and may cause the membrane to become so opaque as to make the subject temporarily blind. The pressure of the greatly

swollen lids, no doubt, accounts for the lesser infiltration of the outer portions of the cornea, and by cutting down the blood supply determines the inclination to ulceration so often seen at the centre. As the vitality of the membrane becomes impaired from excessive infiltration, the tense condition of the eye, by means of the contained fluids, causes the cornea to bulge at the centre, and it may even protrude between the partly opened lids. By destruction of the superficial layers of the membrane, a ragged ulcer is formed, which leaves a permanent whitish cicatrix on healing.

In no instance have I seen any tendency upon the part of these ulcers to perforate the membrane; all have healed readily on cauterizing with nitrate of silver. Vision, of course, is more or less impaired, according to the extent of permanent infiltration around the cicatrix.

In treating the disease, the first object to be attained is the prevention of its further spreading among the herd. This can only be effected by isolating the diseased ones before they have reached the second stage—the stage of muco-purulent discharge—for the discharge of the first stage is not contagious. Whenever the disease makes its appearance, stable all the affected animals, and put them under atropine treatment—five grains to an ounce of water. If constitutional symptoms appear, give a purge, followed by full doses of nitrate of potash. If ulceration is feared, keep a constant stream of cold water on the eye. When an ulcer appears, cauterize it carefully with nitrate of silver. Keep the healthy away from infected pastures.

EDITORIAL.

REPORT OF THE NATIONAL BOARD OF HEALTH.

We are in receipt of the report of the National Board of Health, which gives us a very good idea of the work done by the Board, and shows how invaluable are its services. It is almost, if not quite, impossible for the people or Government to appreciate the vast saving of life and property by the work of this Board.

These considerations bring us to ask, What good could not be done were a similar veterinary body in existence.

What a vast amount of money could be saved if a "Veterinary Bureau" were established, whose duties would be to prevent the spread of contagious diseases among animals.

That the public is becoming fully alive to the importance of veterinary medicine in our political economy, and that the medical profession is recognizing the standing of the veterinarian as a scientist in this country, is shown by the following extracts from a paper recently read before the Medical Society of the County of Kings, by E. H. Bartley, M.D. In speaking of the discovery of the bacillus origin of zymotic diseases, he says: "*From the science of veterinary medicine we are now receiving our most valuable aid in the investigation of the nature of contagion.** *In this country, as well as abroad, great advances are being made by that profession in this direction. We must regret that an active board is supported by Congress for the purposes of research in the diseases of farm animals, while the National Board of Health is allowed to famish.*"

It would seem that both the medical and veterinary professions have something to complain of—the medical profession, that it is not allowed greater liberty and more ample means in investigating diseases, and the veterinary that it is not empowered to check (as it could) the annual ravages of diseases of our domestic animals. Had we a power similar to that delegated to the National Board of Health, the saving to the country from Texas fever alone, not to speak of other contagious diseases, would more than pay the expenses of such a bureau. What we desire is simply this, and it is due to us for what we have already accomplished, that the veterinarian receives exactly the same governmental recognition and aid that is now granted the medical profession. We venture the assertion that we could show, at the end of each year, as good a result as that given now by the National Board of Health.

QUARTERLY JOURNAL OF VETERINARY SCIENCE IN INDIA.

To the English reader of veterinary works it must have seemed strange that veterinary science in India should not before this

* The italics are ours.—[ED.

have found a representative, except through the writings which have at times appeared in journals published at home, the *Veterinarian* and the *Veterinary Journal*, and it will certainly be with pleasure that the *Quarterly Journal of Veterinary Science in India* will be received by all who are interested in veterinary medicine. The first number, which we have just received, forms a thick pamphlet of 144 pages, and contains a number of articles which will, without doubt, be read with a great deal of interest. The *Journal* is edited by Chr. Steel, assisted by Mr. Fred. Smith and John Henry Steel. The paper has our best wishes, and we hope that through its pages veterinarians will be introduced to many interesting facts connected with the diseases of animals in that part of the world.

THE AUSTRALASIAN VETERINARY JOURNAL.

We have looked with anxiety for our number of this new periodical, and were beginning to have some fear for its life, having missed it for the last five months, when the October number arrived a few days ago. We are always pleased to read it, and hope the editors will see that we receive it hereafter more regularly. We would be pleased to have the missing numbers for July, August and September.

THE UNITED STATES VETERINARY JOURNAL.

This is a new periodical, which has been canvassed for lately in this country. As we have not as yet had an opportunity of examining it, we are unable to speak of it intelligently. We feel in duty bound, however, to offer a few remarks in reference to some *friendly* notices which have reached us. It was without our consent, and opposed to a positive refusal, that the likeness which appears on the upper medallion of the title page was printed. It is a species of notoriety which, to say the least, is in our opinion out of place and in poor taste, and we believe that all friends of the *Journal* will do well in suggesting to the proprietors of the paper the propriety of guarding against the commission of the same error again. It will not be by the illustrations that may appear on the cover of the *Journal* that it will make its way with the scientific papers of this country, but by the value of its information and of its reading matter.

CLINICAL CHRONICLES.

By A. Liautard, M.D., H.F.R.V.S.

Veterinary literature is rich in the history of every variety of tumors. Many records can be found in the pages of the numerous veterinary journals, of various growths, from the most benignant to the most malignant neoplasms. There are, however, some which are so rare that a veterinarian may seldom, and some kinds which he may never meet with, and if he does, it becomes his duty to record them, and give his colleagues the benefit of his observations. Our researches through a large library of veterinary works of various countries having failed to show us any record of dermatoid tumors *per se;* and having had the opportunity, through the kindness of Dr. Cattanach, of New York, to examine two in one subject, we are gratified in being able to present their history to our readers, together with the report of one case which happened in Dr. C.'s own practice. We notice these cases not so much on account of any great interest they may possess in respect to questions of treatment, as to place on record a case, which, though it had been already observed by Dr. C., and by ourselves, has not so far we can ascertain, found its way into the veterinary journals.

RARE DERMATOID TUMORS IN THE HORSE.

The subject was a half thorough-bred saddle mare, which was brought to the Doctor for a large lump which had appeared on the left side of the body, a little behind the shoulder near the posterior border of the olecranon border. This tumor was in form irregular, somewhat lobulated, elongated upwards, slightly movable and not painful. The Doctor started to cut down upon the enlargement with a view to its removal, but thinking that it would be instructive to the students of the American Veterinary College, he had the kindness to have the horse at once brought to the hospital. On his arrival the animal presented the conditions already described. A long incision was made in the whole length of the tumor, in a downward direction, and a dissection forward and backward, allowing the removal of a tumor about the size of an English walnut.[1] As the first incision made by Dr.

Cattanach had partly cut through the envelope of the tumor, we had to use a great deal of care in the dissection in order to prevent the escape of the contents of the sac. When this was removed, it was found that another one, much larger, was imbedded in the cellular tissue underneath. This, after a careful dissection was also enucleated. It measured about six inches in length by one inch and a half in diameter. It is elongated, round at both ends, perfectly closed, and distinct from the first one. The first contained a hairy mass, mixed with sebaceous and greasy substance, moistened by a small amount of pus, while the other, which was soft, was filled with a dark-brownish pus. When teased apart, and dry, quite a large bunch of hairs, long and of the same color with that of the horse was obtained. The incision was closed with five interrupted sutures, and as far as we know, the patient has done well.

The only case we can find on record at all similar to this case can be found in the *Veterinarian* of the year 1856, page 197. The case, however, is very different from those before us, which we believe are the first published, and no instance of which is found in any of our works. In the case published by the *Veterinarian*, the growth was due to a probable fold inward of the skin, a sort of invagination; while in this animal it seems that some hair follicles must have been lost in the cellular tissue under the skin, but had still proceeded in their growth and in their functions, and had surrounded themselves with an hermetically closed sac.

The various reports which have at times appeared in the REVIEW concerning the advantages to be obtained in the surgical treatment of cartilaginous quittor by the removal of the diseased cartilage, and the different opinions which have been expressed as to the propriety of the operation, and the length of time which it would require before an animal, thus submitted to operative treatment, could resume his work, will justify us in presenting our readers with another case where the entire time required before the animal was able to return to his labors was a little over one month. This case would probably have but little interest in the estimation of European veterinarians, who are familiar with

the operation, and are often called upon to perform it, but as it is a comparatively new mode of treatment in this country, and as with few exceptions it will be followed with the same result, it becomes a duty in American veterinarians, to report all cases of a similar nature, in order to induce others to take advantage of an operation which enables us to get rid of a diseased process often very tedious, and often also very serious, if one takes in consideration the possible complications it may involve if improperly treated, and also the long time generally required by other treatment.

CARTILAGINOUS QUITTOR—REMOVAL OF THE QUITTOR—RECOVERY IN THIRTY-FIVE DAYS.

By J. S. Denslow, Student.

October 10th, 1882, there was admitted to the Hospital of the American Veterinary College, for radical treatment, a light grey gelding, coming five years old, sixteen hands one inch high, of the Norman Percheron breed, head almost white, with white collar marks on the near side of the base of the neck, with the history of a chronic incurable lameness of the off hind leg. He presented, above the inside quarter of that foot, two large fistulous tracts, from which there was an abundant discharge of pus; these fistulous tracts, when probed, admitted the instrument to pass down upon the lateral cartilage. The posterior canal was smaller than the anterior, which was directed inwards and downwards. The diagnosis of cartilaginous quittor was made, with the prognosis that as ordinary treatment of more than *six months* had failed to effect any improvement, the operation for the removal of the cartilage was the most proper to recommend.

After poulticing the parts for two days, on the morning of the 13th October, the animal was thrown on the off-side, the right hind leg removed from the hobble, and brought with the rope over the near fore-leg, where it was secured. The wall was thinned down on the inside quarter, starting from a point corresponding to the anterior extremity of the cartilage in an oblique direction downwards and backwards, in order to reach the plantar border of the wall about one inch from the heel. By an incision made below the coronary band with a double sage knife, this was separated

from the hoof, and the skin separated by a movement of the instrument under it from its attachment to the external surface of the cartilage. Then, with the right sage knife introduced under the skin, the cartilage was removed by pieces, some of which had the greenish appearance belonging to that tissue when diseased. Some pieces, principally on the lower border, were also undergoing calcification, and required to be scraped with the drawing knife. The operation was concluded by carefully avoiding the wound of the synovial capsule of the last interphalangeal articulation, which could be seen bulging out near the anterior lateral ligament of the joint.

A dressing of carbolized solution with balls and pads of oakum was applied, and the animal being allowed to get up, was placed in his stall with his foot in a tub of cold water.

Dressing renewed on the 15th—There was suppuration of a laudable character; the granulations healthy and luxuriant; the foot dressed as before.—Pulse, 42; respiration, 20; temperature, 100; the patient in a good condition.

Oct. 17th—The first steps of the animal are slightly stiff. The pus is not quite so healthy, being somewhat sanious; granulations look healthy; the foot is dressed with carbolized water, and the animal placed in a box stall.

October 18th—Walked nearly naturally; wound and pus are healthy.

October 19th—Cicatricial tissue begins to show around the wound; the animal steps well.

October 23d—The tendency to swelling in the coronary flap begins to subside.; the edges of the wound and the old hoof remaining at the coronary band are thinned down; same dressing.

October 26th—A soft spot is detected under the skin on the anterior part of the operated region, which is produced by a little excess of pressure by the bandage.

October 28th—Animal walks well; cicatrization going on rapidly.

October 31st—Continued closing of the wound, which is now only superficial.

November 6th—Animal is shod and allowed indoor exercise.

November 7th—Small cicatrice remaining, but closing very fast.

November 15th—The owner was notified that his horse was ready to go home, and he left the hospital November 18th.

EXTRACTS FROM FOREIGN JOURNALS.

AN EASY METHOD OF DETECTING BACILLUS TUBERCULOSIS FOR DIAGNOSTIC PURPOSES.

By George Piersal, M.D.

* * * There is at the present time probably no other subject receiving an equal amount of earnest study and careful investigation with that of the discoveries of Koch, regarding the bacillus of tubercle. While these researches bid fair to yield the most important results, it is no disparagement to that excellent observer to assert that extended investigations into the modifications naturally resulting from the manipulations of other laborers in the same field will alone develope and complete our knowledge of the conditions of existence and life-history of micro-organisms, and determine the exact significancy of their presence or absence, from a practical stand-point.

It will be remembered that the demonstration of the presence of this bacillus, as well as its chief distinctive feature, depends upon its appropriation of certain coloring matters, while the ordinary bacilli of putrefactive change remain unaffected. The method heretofore employed by Koch has been very unsatisfactory from the fact of its uncertainty and frequently entire failure. The modifications suggested by Ehrlich yield more uniform results, without, however, overcoming the element of uncertainty. Dr. Heneage Gibbs, in the *Lancet*, has recently given his plan of staining the bacterium, claiming for the method both uniformity and certainty of action.

The coloring matters employed are magenta crystals and chrysodin (chrysoidin). The latter is a brown, staining the ground-substance, but with less intensity than vesuvin. There solutions are required:

(*a.*) Magenta crystals, 2 grams; pure aniline, 3 grains; alcohol (s. g. 830) 20 c. c.; distilled water, 20 c. c. Dissolve the analine colors in the alcohol, rubbing them up in a glass mortar, adding the spirit gradually until all the color is dissolved, then add water slowly while stirring. Keep in a stoppered bottle.

(*b.*) Saturated solution of chrysoidin in distilled water; add a crystal of thymol to prevent deterioration.

(*c.*) Dilute solution of nitric acid, one part, and two of distilled water.

The following is the process of staining suspected sputum:

Spread a thin layer of sputum on a glass cover, and allow it to dry. When quite dry, pass the cover two or three times through the flames of a Bunsen burner, and allow it to cool. Filter a few drops of solution *a* into a small watch-glass, and in this fluid place the cover, with the charged surface downwards, taking care that no air bubbles are present. Let the cover remain in the staining fluid fifteen or twenty minutes; then wash it in the acid solution, *c*, until all color has disappeared; then remove all the acid with distilled water, when a faint color again becomes visible; then, in the same manner, subject the cover to a few drops of solution *b*, filtered into a watch-glass, allowing it to remain several minutes, until it acquires a brown color; wash away all superfluous fluid in distilled water, and then place the cover in absolute alcohol; afterward dry it properly in the air, place a drop of Canada balsam solution on the cover, and mount.

* * * In a successfully stained preparation, the bacilli are readily seen with a good $\frac{1}{4}$ or 1-5 inch objective, being well exhibited with a $\frac{1}{8}$ or 1-10 power.

In commenting on the diagnostic value of the presence or absence of these micro-organisms, Dr. Gibbs states that in cases of undoubted phthisis he really found them. In those cases presenting suspicious symptoms, some yielded the characteristic bacilli, while in others it was absent. In duplicate slides the putrefactive bacilli remained unstained by the magenta process.—*Abstract of an article in the Western Medical Reporter. Am. Monthly Microscopic Journal.*

EFFECTS OF COLD UPON THE VITALITY OF TRICHINÆ.

By M. Paul Gibier.

I have the honor in the name of Mr. Bouley and my own, to present the results of experiments we made together upon the vitality of trichinæ found in American meats.

The vitality of the parasites existing in hams was observed before freezing, by the following methods:

1. By heat. In warming slowly the platinum of the micro-

scope, the little animal was seen moving spontaneously when the heat reached 40°.

2. In coloring the preparation with the blue of aniline, the violet of methylanihile, or the picrocarminate of ammonia, the trichinæ remained transparent and would not become colored for several days. But if the blade porte object was strongly heated, the trichinæ after moving rapidly, would make a quick motion, become immovable, and would color rapidly.

3. Five young birds were fed during eight days with trichinous meat, first unsalted. In the fœces and intestines of these birds a large number of living trichinæ were found.

The freezing was carried to 20° in one instance, and to 15° in another. In the first case the meat remained exposed for four hours to a dry cold of 27°, and in the second to a cold of 20° for six hours. The temperature was indicated by an alcoholic thermometer placed in the center of the ham.

The cold was obtained by the apparatus of Carré, analagous to that of M. Mignon and Rouart, which produces a cold of 20° and 25° in a circuit of about twenty cubic meters.

The examination of the frozen meats has shown that all the trichinæ they contained were dead. The means used for this observation were the same as the preceding, and the results of the examination are as follows:

1. Under the influence of a moderate heat, the trichinæ show no motion. When heated more they show the same passive movements as muscular fibres.

2. Submitted to the action of the coloring substances above named, they became strongly colored in a few minutes.

3. Five young birds of the same family and same age as the others, were fed for an equal length of time with the same meat which had been frozen. In the fœces, and equally in the intestines of these birds, the most careful microscopic examination failed to reveal the presence of one single trichina. Cold had killed them, and digestion had removed them as lifeless organic elements.

It seems settled that the temperature of 0° is certainly seriously injurious, if not fatal, to trichina. Indeed, fragments of meat, infected with these nematoids living, were closed between two slides of glass and placed in melting ice for six hours. After

this length of time we waited a few hours more before coloring these with the blue of aniline. The trichinæ were colored after two hours and a half, and under the stimulus of heat showed no movement.

For several weeks the frozen meat has not changed in aspect, and presents no difference with that which has not been exposed to cold. This agent seems not to destroy the effects of salting or smoking.

It is proper to remark that similar effects of cold upon trichinæ have already been observed by some of the professors of the School of Medicine of Marseilles.

It is thus well demonstrated that the cause of public hygiene has in the use of cold a powerful means of rendering trichinous meats harmless.—*Société de Biologie.*

SOCIETY MEETINGS.

NEW YORK STATE VETERINARY SOCIETY.

The regular monthly meeting of the New York State Veterinary Society was held at the American Veterinary College, on Tuesday evening, December 12th, at 8 o'clock, with the President in the chair.

After the calling of the roll and reading of the minutes of the previous meeting Dr. Kemp read a paper on Azoturia.

Mr. President and Gentlemen:

In selecting a subject to present before the Society this eveing I have purposely sought one which will admit of much discussion, feeling assured that the views expressed by the older members will be fraught with advantage to the writer and the younger members present.

The term azoturia is one of recent production, proposed by Williams for a disease which has long since been recognized in human medicine, and described under the name of uræmia or uræmic poisoning, and mentioned by various veterinary authorities as hysteria, hæmaturia, sprain of the psoas muscles, etc. It is the causation of the violent symptoms presented in

our animals during an attack of azoturia, and the treatment of the same, to which I beg to call your attention this evening. With the symptoms we are all familiar. The suddenness of the attack, which comes on while the animal is performing its labor; the violent spasmodic contraction of the gluteal muscles, preceded by uneasiness and possibly a breaking out of profuse perspiration; the cramp of the flexor muscles of the phalanges, which causes a knuckling forward of the hind fetlock joints, rendering the standing position impossible in the great majority of cases; the retention of urine, and the dark coffee color of the same when removed, are objects familiar to all.

By the processes incident to the great function of nutrition, the animal receives sustenance mainly from two great classes of food, viz., carbo-hydrates and proteids. It is to the latter class of food we will confine ourselves this evening, and endeavor to attribute to an excessive quantity of this class, the morbid phenomena of azoturia.

We know that the albuminoid class of food, after undergoing the process of digestion by which it is converted into soluble peptone, enters the circulation directly by absorption. We know also that albuminose, after being appropriated from the blood by the tissues, undergoes the process of oxidation, and leaves the body chiefly in the form of a crystaline, nitrogenized, excrementitious substance, which we call urea. But albuminose is appropriated by the tissues only in quantities commensurate with bodily waste. Excessive quantities of nitrogenized food taken into the alimentary canal are readily digested, and pass by osmosis directly into the circulation; but the tissues being capable of assimilating only a certain amount, which is regulated by the physical exertion to which an animal is subjected, any excess in quantity is stored up in the blood during physical inactivity, until not only the solid tissues of the body, but the blood itself is surcharged with albumenoid matter. Now, upon a certain degree of muscular exertion being performed, rapid oxidation occurs, and we have the formation of creatinine, creatine, uric acid, and finally urea, to the excessive quantity of which the toxæmia is due.

The urea accumulating in the blood beyond certain limits acts in a manner analogous to certain poisons introduced from with-

out, such as strychnia. Its poisonous effects are made manifest especially in phenomena pertaining to the nervous system. The exact manner in which it produces exitability of the nervous centers is impossible, at the present time, to explain. We know that urea in the presence of water is readily convertible into ammonium-carbonate. Especially is this apt to occur in the presence of mucus, which seems to possess a catylitic action—and it has been suggested that its toxic properties are made manifest subsequent to this conversion.

That urea is the direct cause of the morbid phenomena, there can be little doubt. The history in every case points to this. The owner will tell us that the animal has not performed his usual amount of labor for several days previous to the attack, during which time he has received the usual allowance of food, which probably consisted of oats, which contain a large percentage of nitrogenized matter. Examination of the urine again strengthens the theory advanced. It is in every instance loaded with the products of tissue waste. Not only is the urine loaded with urea, but the presence of ammonia in considerable quantity is evident, and the existence of ammonia in the blood is readily demonstrable in bad cases.

The presence of excessive quantities of urea in the blood causes functional disturbance of the nervous system—violently stimulating the motor tract of the spinalcord, thus producing tonic contraction of muscles, followed by coma, convulsions and death. The lumbar portion of the cord is primarily most affected, and muscles supplied by nerves radiating from the sacro-lumbar plexus are thrown into a state of violent spasmodic contraction. Paralysis does not exist during the early and acute stage. Excessive contraction of muscles renders the standing position difficult, but sensation is unimpaired, and considerable motion is possible. Coma is apt to precede a fatal termination, although death is often produced by asphyxia.

The therapeutical indications, clearly, are to eliminate from the system the exciting cause of the disease by promoting the excretion of the urea. With this object in view, hydragogue cathartics are usually administered at the earliest moment possible. As plethoric animals are invariably the victims, the abstraction of

blood in large quantities is advisable, and has been followed by good results. By diminishing the quantity of the blood, the quantity of the poison is lessened, and absorption of the cathartics hastened. The kidneys usually act freely enough, although in the latter part of the disease diuretics are indicated. Agents which stimulate the functions of the skin are advisable, and the Turkish bath, if practicable, would doubtless be of great benefit. There are no known means of neutralizing the urea in the blood, or protecting the system against its poisonous effects.

In the discussion that ensued Dr. Coates stated that he agreed with Williams in the disease consisting in a hypernitrogenized condition of the system. He doubted that carbonate of ammonia is found in the blood, but considered that it is formed in the bladder from the decomposition of the urea.

Dr. Kemp said that he had found carbonate of ammonia in the blood taken from an animal shortly after dying from azoturia.

Dr. Liautard, in the course of a few remarks upon the subject, said: The pathology of azoturia is a mystery. The rapid development of the symptoms is unaccounted for. The history is always the same; but why is it that horses with a like history so seldom develop the disease? The pathology requires extensive investigation, microscopically, chemically, and analytically. As to the treatment, cathartics assist in relieving the system of the blood-poison. Any means to relieve the system should be resorted to, but the great difficulty is to get any cathartic to act quick enough. I remember two ounces of Barbadoes aloes having been administered to a small horse suffering with this disease in our hospital. I expected fatal results from it, but the animal made a good recovery with scarcely any purgation. Cathartics do not seem to act, no matter what doses are given. I do not consider the Turkish bath sufficiently effective to relieve the system. Morphine should be administered to keep the animal as quiet as possible.

Dr. Burden recounted his experience in several cases, especially noting some recoveries in which the animals resumed the use of one hinder extremity before the other.

A vote of thanks was unanimously awarded to Dr. Kemp, and the Society went into executive session.

Dr. Martin was elected to membership.

The Secretary read a letter from Dr. Madison Bunker, of Lowell, Mass., reporting a case in which a cow was stricken with paralysis of the hinder extremities some ten days after calving. He found the uterus partly filled with pus, not very fœtid, which he emptied, and then cleansed with a carbolic solution. He administered purgatives, and a rapid recovery ensued.

His letter was acknowledged with thanks.

Dr. Fred. Saunders was appointed essayist for the next meeting, to be held at the American Veterinary College, January 9th, 1883, at 8 o'clock P. M.

H. T. FOOTE, M.D., V.S., Secretary.

PRESENTATION.

On the occasion of the closing of active operations in connection with the stamping out of the Pictou Cattle Disease, Dr. McEachran, the Veterinary Inspector in charge, was the recipient of a testimonial in the shape of a handsome *Nova Scotia Gold Chain* accompanied by the following address, which was presented by Mr. George Caswell, on behalf of himself and fellow officers:

To William McEachran, Esq., M. D., Veterinary Inspector, Pictou.

DEAR SIR:—On the closing of the operations in connection with the stamping out of the disease among the cattle of this county for this season, we, the undersigned officers employed under you in the work, beg to ask your acceptance of the accompanying chain as a small token of our regard and esteem for you personally, and also as an expression of our appreciation of the efficient manner in which you have conducted the measures for the stamping out of the disease. We would also express our thanks to you for the many acts of kindness and consideration shown to us personally by advice and assistance in the carrying out of our various duties, and would further testify of the uniform kindness and consideration with which you have dealt with the farmers and others with whom, in the discharge of what were often unpleasant du-

ties, you have had to deal. Wishing you a safe journey homeward and prosperity for the future, we beg to remain

Yours sincerely,

GEORGE CASWELL,
JOSEPH GRANT,
JAMES GRANT,
JOHN D. McQUEEN,
ALEXANDER FRASER,
LAUCHLIN McINNIS,
PETER McINNIS.

Dr. McEachran replied in suitable terms, thanking them for their handsome expression of good will. He said that while the active operations were for a time suspended, he thought that it was the intention of the Minister of Agriculture to recommence active operations early in the spring, and hoped that another season would see this county completely rid of the plague which threatened ruin to so many.—*Colon. Standard, Pictou, N. S.*

VETERINARY SURGEON WANTED.

Dr. Zuill, of Philadelphia, has sent us a letter from Mr. O. Guenderoth, 434 Mitchell street, Milwaukee, asking to correspond with a good veterinary surgeon with a view to start practice in that city. It seems by the letter that at present there is is no veterinarian in the city of Milwaukee.

NOTICES.

The position of House Surgeon to the Hospital Department of the American Veterinary College will be vacant on or about the 1st of March next. Candidates may make application to the Chief Surgeon of the Hospital, where they will receive notice of the conditions of admission, duties, salary, etc.

To subscribers of the REVIEW who are in need of missing numbers to complete volumes, we would say that Mr. J. C.

Milnes, V. S., of Cedar Rapids, Iowa, has the following duplicates: Vol. 3, No. 7; Vol. 4, Nos. 5, 8, 10, 12; Vol. 5, Nos. 1, 5, 6, 7, 8, 9, 11, 12. The gentleman will mail them to any inquiring party. Dr. N. H. Parren also has a number of duplicates, which he has promised to send us, and from which we will be pleased to provide any of our subscribers who may have imperfect files.

NEWS AND SUNDRIES.

PLEURO-PNEUMONIA.—Pleuro-pneumonia is reported at Secaucus, Hudson County, N. J.

FOOT AND MOUTH DISEASE.—Some one of our exchanges states that after an interval of five months, during which no foot or mouth disease has appeared in the county of Norfolk, England, the contagion has again broken out in a dangerous form, and farmers are very much alarmed.

A NEW VEGETABLE STYPTIC.—During the French expedition to Mexico, a plant was discovered, called by the natives by a name which may be rendered as "Fowlwort" (trandescantia erecta). This has the property, when given internally, or even chewed, of stopping hemorrhages. Specimens have been cultivated, says the *Lancet*, at Versailles, and retain their native properties. It is asserted to be the most powerful styptic known.—*Medical Gazette.*

DEATH OF M. DAVAINE.—The death of M. Davaine, well-known from his discovery of the bacillus of "Charbon," is announced. Many of his most important works won for him prizes from the Acadèmie des Sciences; among the most important are his *Traité des Maladies vermineuses chez l'Homme et les Animaux;* a *Memoire sur la Contagion du Charbon chez les Animaux;* and *Travaux sur la Septicémie.—Medical and Surgical Reporter.*

CATTLE QUARANTINE.—The New York quarantine for imported cattle has been located at Garfield, a station on the Erie "Short Cut," near Passaic, N. J. It is on a farm owned by Mr. Spencer, of the Erie road, has its own private side track and is already supplied with sufficient buildings to accommodate a considerable

number of cattle. The plans and specifications for the government quarantine buildings at this point, and at Baltimore, Boston and Portland have been approved by the Treasury Department, and contracts for their erection will be let out as soon as a reasonable time has elapsed for the reception of bids. The Treasury Cattle Commission had a session in Washington last Saturday, the full Board being present, to decide upon the details of the work. Nothing will be done toward a quarantine station at Philadelphia this winter.—*Breeder's Gazette.*

THE MICROBES OF DISEASE.—Dr. E. Salmon, while speaking for a few moments at a recent meeting of the N. Y. Microscopical Society, incidentally made some allusions to some observations tending to cast doubt upon the supposed bacillii of tuberculosis. In his own experiments he found a diplococcus form in a rabbit affected with tubercular disease, which seemed to be the same as a diplococcus which had been previously described as the cause of tuberculosis. Koch had described a totally different form—a true bacillus. Later observers have failed to discover either form.—*Microscop. Journal.*

MEDICATED MOSS-PEAT POWDER.—Dr. Neuberg has recently introduced in the clinic of Professor Esmarch, of Kiel, a method of wound-dressing to which he was led in the following way: Two years ago a laborer one day appeared who had sustained a compound fracture of both bones of the forearm eight or ten days previously, with considerable laceration. He had got a comrade to surround the whole forearm at once with a thick paste of peat mould, on which was laid a rough splint of wood. When he came to the clinic he was in good general health, and on cleaning off the mould the wound was found to be healing beautifully, without any sign of suppuration. A Listerian dressing was applied, and the limb better fixed, and the man made a good recovery. Dr. Neuberg was led to investigate the properties of peat mould with reference to wound-dressing, and he found that the dust resulting from the manufacture of blocks of peat with a circular saw (as carried on in Schleswig-Holstein), and which is very light in weight and in color, has a powerful affinity for ammonia, carbonate of ammonia, and bad-smelling materials

generally, and takes up nine times its own weight of water. For dressing wounds, Dr. Neuberg now uses two bags of gauze (one double the other in size) wrung out in carbolic solution and filled with mould, the mould in the smaller bag containing two and a half per cent. of iodoform, that in the larger saturated with five per cent. carbolic solution. The smaller bag is placed on the wound directly after disinfection of the latter with carbolic solution, zinc chloride, or iodoform, and the larger bag is placed above, the whole being kept in place by a gauze bandage. The dressing remains on mostly a fortnight or more. Excellent results have been thus obtained. The advantages claimed for the method are these: 1. A given quantity of the mould takes up more fluid than jute, gauze, or cotton wool. If it be slightly moistened its absorbent power is increased. 2. It has great power of absorbing products of decomposition of organic substances, and hence prevents its occurrence. 3. The moistened mould is a very soft, but still elastic substance, and so is easily placed in the required position in the bags before applying them to the inequalities of the body. 4. It is the cheapest of known antiseptic dressings, one pennyworth being sufficient for one dressing, and still less if the preparation with an antiseptic be left out. 5. It makes a very suitable pad for all purposes when enclosed in gauze.— *Veterinary Journal.*

EXCHANGES, ETC., RECEIVED.

HOME.—American Cultivator, Minnesota Farmer, Farmers' Review, College and Clinical Record, Rural New Yorker, American Agriculturist, Breeders' Gazette, Country Gentlemen, National Live Stock Journal, Medical Record, Turf, Field and Farm, &c.

FOREIGN.—Veterinairian, Veterinary Journal, Clinica Veterinaria, Quarterly Journal of Veterinary Science in India, Australasian Journal, Annales de Bruxelles, Archives Veterinaires, Recueil de Medecine Veterinaire, Journal de Zoötechnie, Revue d'Hygiene, Revue fur Thierheilkunde und Thierzucht.

JOURNALS—City & County, Farmers' Magazine, Medical Herald, Ohio Farmer, Practical Farmer.

PAMPHLETS—Uber Zuchttahme, Von Dr. Ludwig *v.* Thanhoffer, First Annual Announcement of the School of Veterinary Medicine of Harvard University.

COMMUNICATIONS—A. A. Holcombe, W. T. Deer, J. S. Cattanach, J. P. Klench, J. Kemp, jr., H. J. Foote, J. S. Denslow, T. Saunders, N. H. Paaren.

sheath between the navicular bone and the perforans tendon, sliding upon it. At first may be observed a certain injection of the synovia, and a darker hue in the coloration of the trochlear cartilage with the corresponding face of the tendon, the synovia becoming reddish and thick, the surrounding cellular tissue becoming, also, inflamed and infiltrated. At a later period, when the disease has somewhat progressed, there is a thickening of the walls of the capsule, which is then filled with a clear citrine serosity. There is then, a kind of hygroma, a chronic dropsical condition of the sheath. In the interior of this are found fibrous bands, running from the tendon to the bone. If the disease is older, erosions are found upon the diarthrodial surface of the navicular, varying in number and in size, and the tendon is roughened on its anterior face, with longitudinal fissures. At times, it becomes atrophied and thin, dry and brittle; and has been found, it is said, ruptured transversely. In many cases, the cartilage covering the bone has disappeared and the bone is exposed, hollowed and affected with osteoporosis. The union of the bone with the tendon has also been found among the varieties of determination.

IV.—*Diagnosis.*—This disease is at first easily mistaken for some form of rheumatic affection. Where pain is the main symptom it is easily detected, but where there are no other signs of inflammation, it is just the lack of proportion between the intensity of the lameness and the serious symptoms, such as the absence of heat; of special sensibility; of pulsations in the digits, which distinguishes navicular disease from other affections of the feet. The error with contracted heels is easier, as here the change of form of the foot being primitive, at once attracts the attention of the practitioner; while this alteration in the foot is absent in naviculartharitis at the outset of the disease.

V.—*Prognosis.*—Generally, it is unfavorable, as most commonly the veterinarian is called only when the disease has already made serious progress and passed into the chronic stage; and again, because of the difficulty of reaching the disease by reason of its peculiar location.

(*To be continued.*)

CEREBRO-SPINAL MENINGITIS IN THE HORSE.

(Paper read by H. James, Veterinary Student, Ontario Veterinary College, Toronto, at weekly meeting of Veterinary Medical Society.)

Mr. President and Fellow-Students :

Probably at the present time there is no disease regarded with wider-spread interest by the profession and horse men generally of the United States and Canada, than the one known as cerebro-spinal meningitis. Its very obscurity and ill-understood nature, together with the paucity of literature bearing upon the subject, have further tended to deepen that interest. Feeling that my own experience of the disease was too slight to be of much value, and not having much faith in mere theoretical expositions of its nature, I corresponded during the past summer with several leading American practitioners, who have had long practical experience of this malady; and to their replies, given with the greatest kindness and courtesy, I am largely indebted for the compilation of my paper. With this preliminary, I will now proceed.

Cerebro-spinal meningitis may be defined as a malignant fever of the epizootic class, resulting from a specific poison, which produces exact results, modified in degree in different cases, and characterized by profound disturbance of the central nervous system. Though this fatal disease has been noted in the human race since the beginning of the fourteenth century, it is only during the last thirty years that its occurrence in the equine family has been brought prominently before the public. Of late years, since the attention of the profession has been called to its existence in the horse, it has been recognized in places far distant from the Eastern States of the American Union, to which locality the disease was formerly thought to be peculiar. Two years ago the English veterinarians first made its acquaintance, though it is said to have been prevalent in Ireland at various times previously, and according to some it has been seen in far-off India. Returning to this continent we find that Professor Smith has met with the disease on Canadian soil, and Dr. Holcombe, I.V.S.U.S.A.,

believes that it probably prevailed as an enzootic in the Indian Territory a few years since. Thus at present we cannot accurately lay down its geographical limits; probably it occurs in the sporadic form in nearly all countries; it is only in the United States as yet, that the disease has taken on an epizootic character. The tropical regions proper have hitherto escaped its ravages in the human subject, and are believed to be exempt; perhaps the same may hold good of the horse.

Etiology.—Its etiology is enshrouded in mystery; age and extreme conditions of life, which have so powerful an influence in the human subject, exert no appreciable effect in the horse; it is met with alike on high plateaus and marshy lands; in some outbreaks mares seem to be more susceptible than geldings, but just as likely as not in the next run of cases, this state of affairs is reversed. Atmospheric influences have been called in to account for its development in the epizootic form, and may possibly be concerned in the distribution of the virus. Though isolated cases may be met with at any season of the year, it is essentially a disease of the cold months. It has been pointed that the most severe outbreaks take place in early spring, when the sun is warm enough to thaw the ground during the day, and so release the poisonous germs, but the weather still too cold to allow of the stable doors and windows being left open for ventilation; this state of affairs causes a great accumulation of poisonous matter in the stables, which produces its results in due time. In the Canadian outbreak, Profsssor Smith traced the cause to impure water; on remedying this, no more animals died, but next year, after watering at the same place, the disease again appeared. This appears to be conclusive evidence that it may be produced as a dietetic disease, and most probably a great many sporadic or localized outbreaks might be found to have a similar origin. In the November number of the *American Veterinary Review*, is an article by Dr. Michener, of what is, in his locality, called "choking distemper," and also by some, convulsive ergotism. In this particular instance, over forty horses were fed on some brewers' grains, and every one died from the disease; on being fed to cows, these grains did not produce any deleterious effects; he also mentions

the case of a farmer, who lost five horses from feeding on musty oats, some of which oats being fed to horses in Philadelphia, killed them in like manner. Dr. Michener believes it to be due to fungus spores floating in the air, or adhering to the feed, and proposes to call it, "Fungosus Toxicum Paralyticus." By some it has been included among the neuroses, or functional disorders of the nervous system, without typical post-mortem appearance, or anatomical characteristics. Without doubt the debilitating effects of bad ventilation, overwork (especially night work) and sickness afford a good opportunity for its development; but in the epizootic form we must admit the existence of a specific blood poison, having a special affinity for the nervous centres. Frequently we meet with the disease in horses enjoying the best sanitary conditions, and even attacking them in preference to weaker animals; such has been the experience of many practitioners. It was formerly regarded as of malarious origin, but the inefficacy of quinine disproved that idea. Some years ago Professor Large advanced a theory which to a large extent has influenced the therapeutics of cerebro-spinal meningitis ever since. He regarded it as a specific blood poison, affecting the ganglionic or sympathetic system of nerves, the toxic effect of the blood producing a condition of vaso-motor paresis, and the train of symptoms being due to the loss of the governing power of the circulation—in a few words, a paralysis of the sympathetic. Its infectious character seems to have been indicated in a few instances in the human race; but in the horse it is usually regarded as non-transmissible, and dependent on some cause acting generally.

Symptoms.—The symptoms vary with reference to the accumulation and multiplication of the virus in the system, and the portion of the cerebro-spinal axis immediately affected. At the commencement of some epizootics, the fulminant form often prevails; the animal with such slight premonitory symptoms as to be overlooked, wabbles in his gait, goes down, furious delirium alternates with coma, the breathing is stertorous, and he soon dies from rapidly progressive paralysis. In a few cases, and those mostly of the above-mentioned type, the animal, after slight twitchings of the muscles, is suddenly seized with opisthotonos,

or emprosthotonos, a slight degree of trismus being occasionally present, or the lips twisted to one side; in a few instances general rigidity of the muscles of the hind-quarters has been observed. These phenomena arise from the exalted condition and perverted distribution of nervous energy; but this state soon passes over and perfect enervation prevails. The undoubted occurrence of tetanic spasm in the horse in this disease is interesting, as some medical authorities have thought that the opisthotonic attitude so frequently assumed by children, when suffering from epidemic meningitis, was purely voluntary, and the one which gives most relief from pain. But we must not imagine that cerebro-spinal meningitis is characterized by tetanic spasm, for this only occurs at the outset, and even then is met with in a minority of cases; usually, the observer is struck by the utter prostration and depressing effects of the poison on the animal economy; the muscular system is entirely flaccid, and there is a laxity of every function. In the majority of cases, however, there are certain early premonitory symptoms of the oncoming disease. The horse appears dull and indifferent to surrounding objects; he droops his head, and shows symptoms of more or less severe headache; the appetite is poor; if in a team he lags behind, the gait becomes staggering, and the hind legs plait, as it is termed. Some local paralysis may now be noticed, such as lopping of the ears, or loss of prehensile power in the lips, accompanied by slavering. Difficulty in deglutition is present in every case, and is often the first symptom noticed. Mastication is very slow, and in drinking, the nose is dipped nearly to the eyes in the water, and although he appears to drink readily, yet little is taken. Often this difficulty in deglutition leads to the practitioner being called to see a case of sore-throat, as it is thought to be by the attendant; this important symptom arises from the animal being unable to "trough" his tongue, through partial or entire paralysis of the muscles controlling that organ. Frequently, the first symptom shown is a loss of muscular power in the tail; you can readily turn it up over the croup *without resistance*, it is very imperfectly used to brush off flies, scarcely reaching the flanks, and often not used at all where sensation is much impaired. Some cases are ushered in by an at-

tack of colic, apparently neuralgic in character; such cases require very careful watching in an epizootic. *Congestion of the retina as seen with the opthalmascope is one of the earliest, if not the* FIRST *evidence of the disease.* In from a few hours to four or five days the animal becomes comatose; but at any time during the ordinary course of the disease he may be easily aroused, though sometimes becoming very much excited when disturbed. The somnolence or apathy may persist throughout in some cases, but is more frequently alternated with delirium, which is sometimes so violent as to render it dangerous to approach the animal; such cases generally die in a mad state. The pulse is not much altered, but usually weak and soft; in fact, the capillary circulation is *sometimes* so slight as to lead to extensive sloughing of those parts that come in contact with the ground or slings; in acute cases the pulse is often extremely fast and irregular, but in the experience of most practitioners never "wiry," as stated by Lyman in "Williams' Practice." The temperature in typical cases is about or below the normal, but in protracted cases a few hours before death, and in fulminant cases living only a few hours, we may find it run up to 105°; bed sores may cause a rise of 1°, but excepting in the above condition a high figure usually points to lung complications. The bowels share in the prevailing torpor, and are usually inactive; retention of urine readily occurs from paralysis of the bladder, hæmaturia may be present early and late in the disease, nearly pure venous blood being passed in some cases. Sexual excitement is nearly always present in mares or stallions; priapism has been noticed in the gelding. They frequently struggle violently in the slings, and sometimes your patient will astonish you by turning a complete summersault. Rudimentary forms, in which difficulty in deglutition and lumbar weakness are the most constant symptoms, occur on the outskirts of epizootics. Fatality is in ratio with the sudden or gradual development of the symptoms; in cases which recover, the acute symptoms are over by the eighth or tenth day as a rule; death usually results from coma. Young and vigorous animals recover quickest, relapses are common, and the practitioner should always be very careful in making a prognosis in horses past their prime. As the animal improves

he becomes brighter, delirium ceases, and the intervals of coma are lessened; in nearly all cases he gains flesh while in the slings. Dr. Rogers, of Gloucester County, New Jersey, informs me that two of his cases, apparently progressing favorably towards recovery, died of true apoplexy; in each instance the clot being thrown out at the base of the brain, and in one case, a horse aged nineteen, producing in a beautiful manner the respiration similar to that seen after section of the pneumogastric. The paraplegia, which persists in many cases after the animal is otherwise restored to health, is the bugbear of American practitioners; it often lasts for months, resisting every method of treatment.

Diagnosis.—This is sometimes beset with difficulties, as shown by the fact that cerebro-spinal meningitis, azoturia, and paraplegia were regarded as one and the same disease; but the diagnostic points have been pretty well settled by close and scientific observation. Occasionally it may be confounded with the nervous form of influenza; the occurrence of convulsive fits, coma and lumbar weakness may be associated with real sore throat, cough, discharge from the eyes and nostrils, high pulse and temperature; such cases may most probably be referred to the specific blood-poison of influenza, acting more especially on the nervous system. Azoturia is frequently mistaken for it, but there is an absence of the hard and *board-like* condition of the gluteal and femoral muscles seen in the former disease. There is not the pain, the high febrile condition and excessive sweating over the hind quarters, as seen in azoturia. You may have bloody urine early and late in cerebro-spinal meningitis; the urine may be dark or loaded with urea or its analogues; but you will not find the coffee or chocolate-colored, thick, grumous discharge, loaded with albumen and often with casts, that you find in azoturia. The previous history of the case, the idleness and high feed, the fact that the animal frequently goes lame on one hind leg before showing the more acute paraplegic symptoms, together with the absence of that early onset of coma and difficulty in deglutition seen in cerebro-spinal meningitis—all these will help the careful practitioner to form a correct diagnosis. In paraplegia, again, we have high febrile condition and pain, very different

from cerebro-spinal meningitis; the animal as a rule thrashes about more; the hind-quarters remain immovable and the horse nearly always gallops with his fore feet, a peculiar symptom never observed in cerebro-spinal meningitis. We should have no difficulty in distinguishing it from spinal meningitis, which occurs from well-marked causes at any season of the year. In simple spinal meningitis we have a full, hard pulse, high temperature, perfect deglutition and absence of retinal congestion. Sunstroke occurs at a different time of year to that in which cerebro-spinal meningitis chiefly prevails, and the high temperature, peculiar dryness of the skin, occurrence on a hot day, and general history of the case, are sufficient to prevent our falling into error. No absolute distinction can be drawn between epizootic cerebro-spinal meningitis and the sporadic malady of thes ame name.

Post-Mortem Appearances.—Though many pathological states of the brain and spinal cord have been described by various authorities, there is still a remarkable difference of opinion among the profession on the subject. Whether this arises from most post-mortems having been made on fulminant cases, in which death occurred too quickly for local lesions to be developed, is hard to say; the same thing obtains in the human subject and has led to its being classified by some among the *nervous* or functional diseases of the nervous system. Dr. Holcombe has never found any post-mortem appearances that were constant and could explain the pathology. Dr. Very of Boston, has made many post-mortems, but never saw any lesion in the spinal cord or any of its membranes, beyond finding a little fluid which he was satisfied was not the result of any diseased condition previous to death. Dr. Rogers says that you will usually find the membranes of the brain and upper part of the spinal cord more vascular than normal, with increase of serum in the sub arachnoidean space and in the ventricles, and in some cases an abundant exudation of thick, yellowish lymph at the base of the brain, together with œdema of the brain and cord; and this loosening and separating of the nerve elements possibly accounts for the motor and sensory disturbances seen during the course of this disease. In those few cases which die of apoplexy the clot will usually be found

at the base of the brain. Its occurrence is interesting as showing the passively dilated condition of the small blood-vessels. In England Professor Axe found ten or twelve ounces arachnoidean fluid, pia mater, brick-colored and engorged, membranes of both brain and cord intensely congested and marked with blood clots; brain showing a similar condition with some staining of serosity, with which it was infiltrated, and no softening; mucous membrane of large intestines and villous portion of the stomach congested: so marked were the latter lesions that an analysis was made for vegetable or mineral poisons, but with negative results. Somewhat similar appearances were observed by Professor Smith in the Canadian outbreak. Others have noticed separation of the dura mater from the vertebræ of the spinal cord by extravasated blood, embedding of the nerves as they emerge in seropurulent exudation, pus in the central canal of the cord, and purulent infiltration of the pia mater in the lumbar region. The ecchymoses of the intestines are probably analogous to the purpuric spots seen so often on the skin of human patients suffering from this disease, and which in them gave to it the name of "spotted fever" in many places. Their occurrence gives strong support to the view that we have to do with a blood poison, of whose nature, however, absolutely nothing is known.

Treatment.—Owing to our imperfect knowledge of the pathology of cerebro-spinal meningitis, there necessarily exists considerable controversy as to the proper therapuetic measures to be adopted. Most empirics, not appreciating the constitutional nature of the disease, direct all their treatment to the throat and loins. Chloral hydrate and bromide of potassium have been recommended by some as valuable medicinal agents, especially in cases where delirium runs high; while others assert that the bromides have no effect on the larger domesticated animals. The combination of ergot with strychnine, belladonna or chloride of iron, is highly praised by many; its use is especially indicated in those cases where hæmaturia is present. Dr. Very, of Boston, found that arsenic and atropine placed on the tongue yielded apparently good results, but in his opinion all treatment is guess-work. Acting on his theory that the disease was essentially a paralysis of

the sympathetic, Professor Large, of Brooklyn, gave belladonna throughout the active course of the disease, and also used it as a prophylactic; but the results of the preventive treatment by giving this drug, have been criticized with some reason by other veterinarians. Though used more or less by practitioners, many place no reliance upon it until the more acute symptoms have passed and then only do they begin its exhibition. A grave objection, urged against the use of belladonna by some, is its tendency to throw a horse off his feet, a thing we should especially avoid in cerebro-spinal meningitis. Largely owing to the experiments of Dr. Holcombe, the employment of strychnine in this malady was commenced, and the good results obtained have led to its general adoption. It has a powerful influence on the nutrition of the spinal cord, and is of great value in both preventing and curing the resultant palsy. Some give it, after the acute symptoms have passed, in one to three grain doses, others, again, begin in large doses, given by the mouth at intervals of one or two hours, even where opisthotonic or emprosthotonic symptoms are present, running up from two or three to six, eight, or nine grains of the drug at each dose. In acute cases, when the animal is down and unable to stand in slings, Dr. Rogers places all his reliance on hypodermic injections of morphia, but says you must push them until they produce *automatic movements simulating the act of trotting, and profuse diaphoresis.* He has never seen a case die where the drug could be pushed to this extent, but it will be necessary to give from forty to sixty grains in two or three hours in order to get the desired effect. If, after giving about fifteen grains, the horse sleeps quietly, though only for a few minutes, he finds it a favorable symptom; gives tincture of matico and strychnine during convalescence. The opium treatment of Dr. Rogers seems somewhat similar to that used by Dr. Stillé, of Philadelphia, with great success in the epidemic meningitis of children. Stimulants, such as aromatic spirits of ammonia, alcohol, nitrous or sulphuric ether, are extremely useful at times, and must frequently be pushed to a considerable extent. After the more pressing symptoms have been alleviated, carbonate of ammonia given in bolus, along with ginger and gentian, will be

found of service in keeping up the appetite. Most practitioners purge, under the idea that they have to deal with a blood-poison, and that it is their duty to eliminate it as quickly as possible from the system; but it is necessary to give half as much again as you would do under ordinary circumstances. For my own part, I think those practitioners are right who consider depletive measures inadvisable in such a weakening disease. Slinging should always be resorted to when the animal can stand; if not got upon his feet within twenty-four hours, his chances are very poor indeed. A few pretend to treat cases when down, by turning from side to side, but such a course is very unsuccessful. As to the application of counter-irritants, this is another disputed point; though condemned by many as absurd, the most successful practitioners use mustard to the spine, and even to the throat, and claim that benefit is so derived. Where delirium runs high, ice to the head may be of service, or this not relieving him, a good mustard plaster to the poll may have the desired effect; in many of these cases hot and cold applications used alternately, are found to answer better than either used alone. In acute cases, where there is imminent danger of collapse, and in others where deglutition is impaired to such an extent that the animal can scarcely swallow at all, the plan proposed by Professor Smith is well worthy of a trial. A specially constructed tube, about twice as long as the ordinary catheter, but of similar diameter, is passed along the inferior meatus of one of the nostrils, and pushed on to the stomach; two catheters fixed smoothly and strongly together would answer in an emergency. Through this, stimulants or other medicinal agents may be poured, and even nourishment be administered. The action of the bowels should be solicited by injections; and it will usually be found necessary to pass the catheter night and morning for some days. If unable to swallow, the vital powers may be kept up by whisky, eggs, milk and gruel, given either by enema or preferably by the tube. When convalescent, if there is resultant paralysis, use a current of electricity strong enough to produce a sensation of pins and needles, applied to the parts three times a day and *decreased* on the slightest signs of improvement; try also the effects of nervine tonics, as

arseniate of potash, strychnine, and the preparations of zinc. Build up the system by means of vegetable and mineral tonics, and give iodide of potassium and gentle diuretics to promote absorption of any effusion which may have taken place. Laxative food, such as scalded oats and bran-mash, roots, apples and linseed, should be given throughout the disease, and will obviate the tendency to constipation. Give exercise as soon as possible, being very cautious at first that your patient does not fall and hurt himself; it is a good plan before taking him out of his stall, to alternately advance and back him for a few steps, and then, with the help of two assistants, to prop his hind-quarters in turning, you may move him off; if the weather is fine a good sun-bath daily will be of great benefit. Stimulating liniments, or cantharidine, biniodide of mercury, or tartar emetic blisters, may be applied to the loins for the resultant palsy; but many of these cases recover after unavailing treatment, when given a long rest and a run at pasture. Whenever possible, especially in the acute stage, give your remedies hypodermically, and while employing the powerful therapeutics mentioned, such simple but valuable measures as hand-rubbing, comfortable clothing and bandages to the limbs should not be forgotten; a good deal more in veterinary practice depends on nursing than is usually thought by the laity. When an outbreak occurs, a searching investigation should be made into the quality of the food and water, and even if nothing be detected, it will be well to completely change the diet; defective ventilation or drainage should be remedied, and, if many new cases occur despite all sanitary precautions, remove the animals away from the infected stables. Then thoroughly disinfect by means of sulphurous acid gas liberated in large quantities by placing sulphur on red-hot iron plates, apply carbolized whitewash to the walls, and on returning the animals put them on a course of hyposulphite of soda: these measures fully adopted will materially lessen both the number and severity of the cases. Doubtless, in the near future, the subject of the diseases of the nervous system of our domesticated animals will receive that attention from the profession which its importance entitles it to. Within a comparatively recent date, catalepsy and locomotor ataxia have

been observed in the horse, and as an inevitable result of domestication, we may expect that the list of these disorders will yet be greatly increased. Few veterinarians, up to the present time, seem to have had the inclination or opportunity to fully investigate the nature of cerebro-spinal meningitis; to the lack of sufficient data is due the meagreness of my paper, which I now draw to a close.

THE BERLIN CATTLE MARKET.

By R. S. Huidekoper, M.D., V.S.

"Splenic fever, black leg and red water; these are all due to the primary cause of indigestion and malnutrition, sometimes from poor, dry and scanty food, and at other times from overfeeding in moist places where the herbage is young and succulent."

These few lines, copied from the *New York Times*, were the first thing I saw on opening the *Pittsburgh Stockman*, just received from America, when I came in from a day passed in examining the cattle market and slaughter houses of Berlin (Germany).

The contrast was so great between the almost criminal carelessness of the authorities, who allow such a belief to be prevalent in a country, and the complete precautions (to American eyes almost excessive) which are here in force for guarding against the "splenic fever" and *other contagious* diseases (dangerous alike to animals and to man), that I believe an account of the Berlin "vieh markt" may be of value.

The cattle market and slaughter houses form a small town by themselves in the suburbs of Berlin, and are under the direct supervision of the government.

It is the centre not only for the supply of Berlin, but from here large quantities of animals and of dressed meat are sent to the other German cities and to Brussels and Paris.

The market days are held twice a week, and an average of over 4,000 cattle, 8,000 sheep and a greater number of hogs are handled at each sale.

The buildings are all of brick, laid in cement, and all the ground, including that of the open sheds and streets, is covered with cement in order to facilitate the most perfect cleanliness.

To the market is attached a corps of twenty-two (22) veterinary surgeons, whose duties are divided between the examination of the live animals and the inspection of the butchered meat.

All cattle coming to Berlin must be unloaded at the market, and all butchering must be done here.

As the cars with the animals are run up to be unloaded, an under veterinary surgeon must inspect each load, as it leaves the car, and before it has left the platform, which latter is not allowed if any sign of disease is detected.

The animals are then driven to the stabling allotted to the commission merchant, and there again undergo a more thorough inspection.

The unloading platform is cleaned and disinfected each night, and in case of a contagious disease being detected the animals are returned to the same car, to be run to the special building for them.

If the disease is not discovered until the second inspection, the animals are not driven, but hauled in special wagons to the separate building, so that no additional contact can take place between them and the other lots.

The empty cars, without exception, (even when they have only served for the transport of a single horse) are now run into a yard for washing.

The railroad track is here laid on a cement ground, with convenient gutters. It runs each side of a large building, which contains boilers for heating water. Each car is first swept out and washed with a stream of hot water from a hose. It is then run to another track where it is mopped from top to bottom with water at a temperature of 70° Celcius (158° F.) which contains soda at the rate of 75 grammes (over 2 ounces) to each bucket full of water.

When the disinfection is completed, the foreman pastes a blank on the car door, and when the veterinary inspector shall have examined the work and signed the blank, the car is again ready for use.

The shipper or commission merchant pays a tax of two marks (fifty cents) for each cattle or sheep car, and three marks (seventy-five cents) for each double floored pig car.

The animals recognized, attainted or suspected of a contagious disease, are run into a special building, where they are kept until condemned, in which case the owner is indemnified by the government, or till they are sent to a special slaughter house, where, under the supervision of the inspector, the feet, skins, etc., are disinfected or destroyed, and the meat is examined before its sale is authorized.

After visiting the stables for the contagious diseases we were met at the gate by a man who washed our boots with a disinfectant, and brushed our clothes, before we were allowed to visit the other buildings.

When butchered, the meat is all inspected by the veterinary surgeons before its removal from the slaughter house or its sale is allowed.

The slaughter houses are divided into rooms of all sizes to suit the demands of the renters (butchers). The floors are of tiles, laid in cement, the walls in slate, and there is every possible convenience in water and ventilation. A railroad track runs into the larger rooms for the benefit of the wholesale butchers who ship to Paris and other places by rail.

The buildings for the pig butchery are arranged in the same manner but each room contains a tank, to which steam pipes are attached for heating the water. In addition there is one building where the owners of a single pig can have, in common with others, all the facilities which are afforded to the regular butchers.

In the pens the hogs have all undergone a preliminary examination for Cysticerci—a disease fortunately rare in the United States.

In each slaughter house for the pigs are attendants with microscopes who examine determined parts of each animal butchered.

The butchers pay for this a tax of one mark (25 cents).

One-half of this goes to pay for the examination and the other half to a fund from which the unfortunate owners are indemnified when *trichinæ* are discovered in their pigs.

In the slaughter house for the animals with contagious diseases, is a superior veterinary surgeon to whom all suspected meats are referred.

With the uniting of the German States under one general government it was made possible to enforce stringent laws for the protection of the whole country.

The result has been an ample reward for the expense entailed.

The contagious diseases of the domestic animals have yearly decreased. The liberal indemnity paid by the government for condemned animals facilitates the application of the sanitary laws and the people are more than content in seeing the goverment spend on the veterinary officers in each department and city but an iota of the money which they would otherwise (and formerly did) lose in their animals.

In America, where the *people are* the government, will they not take an equal interest in the protection of their own property and demand a sufficient and proper inspection of the food which they eat?

A few years ago such a demand was not possible, as our number of men, educated to properly judge diseased animals, was small and derived only from Europe.

To-day however, an increasing number of intelligent men are receiving the proper education in the city of New York, and are waiting for *you*, Readers, Agriculturalists, owners of valuable animals, and guardians of your families' health, to come forward and demand of the government help and aid for the advancement of this education, and public positions which will secure *you* the benefit of it.

METASTATIC ABSCESS IN THE LIVER OF A HORSE.

By J. C. Meyer, Jr.

In this case the patient is a bay draught mare, aged seven years who came from the country on the 3d of July 1882, apparently healthy, and in high condition, and was kept at work until the evening of the 14th of July, when she was attacked with flat-

ulent colic. She was considerably tympanitic, and restless, the greater part of the night. On the following morning she appeared quite comfortable and ate her breakfast. Contrary to my instructions, she was put to work on the same day, which developed an acute case of laminitis. This sequel proved somewhat obstinate to treatment, but, by the 5th of August she recovered sufficiently to travel to pasture, a distance of ten miles, without suffering any injury, where she soon became quite convalescent. September 1st, I was requested to prescribe for her for the relief of a laryngeal trouble which she had recently contracted. This malady, as I was afterwards informed, was associated with numerous submaxillary abscesses, and subsequently a large abscess in the guttural pouches, characterized by the presence of a tumor in the right parotid region. For the treatment of this latter complication, my services were solicited on the 27th of September, when I visited her. After exploring the tumor, and being convinced that the pus could be reached with perfect safety, I carefully made an incision at the most prominent point of the tumor, which was about the middle of the parotid gland. This furnished an outlet to a large quantity of white, thick, inodorous pus. On introducing my index finger into the cavity, I found that it extended downwards towards the inferior surface of the larnyx, where I made a counter opening in order to establish free drainage. The after treatment consisted in cleansing out the cavity by injections of carbolated water, with very good results, the wound healing quite rapidly. The mare's general condition soon began to improve; regaining appetite, strength and weight; in fact, she had the appearance of making an entire recovery at an early date. This improvement was however, but of short duration. About the latter part of November, I was informed by her attendant that she was again failing fast. He pronounced her a heart-broken, living skeleton. When turned out she would stand isolated, at a fence, without leaving the place all day, not paying any attention to other horses nor to food, and when in the stable would lie down most of the time. She was put on a tonic treatment until the 6th of December when, by request, I visited the patient. I found her standing in a wide stall, well representing

the conditions of asthenia, apathy, and marasmus. She abstained from food almost absolutely. She would lie down on either side and groan, and at times, it cost her strenuous efforts to rise. Her pulse numbered 72 per minute, and weak. Her respiration was exceedingly quiet, while standing. Her temperature, 103. All visible mucous membranes looked pale and anæmic. Her extremities were cold, and not swollen. The small quantity of fœces she passed was of a mushy consistency. Her urine was scanty, and of a light specific gravity. These progressive grave symptoms induced me to make a fatal prognosis, whatever organic disease might prevail, and I ordered her destroyed. Her owner, however objected, as long as she was not entirely prostrate. This state was soon at hand.

On the morning of the 15th of December, I received a telephonic message from the farm that she was down and unable to rise. Being anxious to make a post mortem examination, I notified her owner (who lives in the city), as to her condition, and obtained his consent to destroy her. Arriving at the farm, I found her lying on her left side, struggling and groaning considerably, in an utterly helpless condition. I destroyed her at once, and proceeded with a post mortem examination, which revealed the following pathological lesions : Division of the abdominal walls along the linea alba, from behind forwards, gave vent to a copious flow of pus from the epigastric region. This pus was almost subcutaneous, and resembled that of the former abscess in the parotid region in every respect—thick, white, inodorous matter. Further examination disclosed the existence of firm adhesions of a portion of the small intestines and the diaphragmatic curvature of the colon to the walls of an abscess that connected the liver with the abdominal parietes. This abscess extended clear into the right lobe of the liver, a distance of 4 to 6 inches. It was divided into two separate apartments by a partition leading from the abdominal walls. The cavity within the hepatic tissue was arranged in a series of irregular, open receptacles, filled with pus. The inferior half of the right lobe of the liver was elongated and considerably firmer than natural. Through it traversed numerous small canals filled with pus. The remaining